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ENGINEERING REPORT:

**APPLICATION FOR MINOR MODIFICATION OF FM BOOSTER
KFTZ-FM1, CHANNEL 277D, 103.3 MHz
POCATELLO, ID**

**FOR KFTZ(FM)
IDAHO FALLS, ID**

WESTERN BROADCASTING, LS, LLC

7/2003

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1. Purpose of Application

This Engineering Report is part of an application for minor modification of FM booster station KFTZ-FM1, serving shadowed portions of the KFTZ(FM) service area in the vicinity of Pocatello, Idaho, by Western Broadcasting, LC, LLC. KFTZ operates on FM Channel 277C1 at Idaho Falls, Idaho. The proposed booster operation is on FM Channel 277D (103.3 MHz) with a maximum lobe effective radiated power of 2.0 kilowatts.

2. Allocation Considerations

Exhibit 11 shows the relationship between the proposed booster 60 dBu F(50,50) contour and the KFTZ 60 dBu F(50,50) contour. The facilities specified herein prevent extension of the proposed booster's 60 dBu contour outside the KFTZ 60 dBu contour.

The attached spacing study presumes that the booster is operating as a Class A station. There is sufficient distance between the proposed booster and any first-adjacent channel stations that the field strength of the first-adjacent channel station will be more than 6 dB greater than the booster field strength at all locations within the protected contour of the first-adjacent channel station.

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SEARCH PARAMETERS FM Database Date: 030724

Channel: 277A 103.3 MHz
 Latitude: 42 50 55
 Longitude: 112 26 46
 Safety Zone: 50 km
 Job Title: KFTZ-FM1 POCATELLO

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Call Status	City St	FCC File No.	Channel Freq.	ERP(kW) HAAT(m)	Latitude Longitude	Bearing deg-True	Dist (km)	Req (km)
NEW-T	POCATELLO		275D	0.050	42-54-49	5.7	7.26	0
APP	ID BNPFT-030317JHN		102.9	217.0	112-26-14		0.00	TRANS
ADD	RUPERT		275C0	0.000	42-20-03	239.3	110.85	86
	ID RM-bg-4		102.9	0.0	113-36-12		24.85	CLEAR
K276DR	MONTPELIER		276D	0.010	42-23-22	120.1	100.92	0
LIC	ID BLFT-940714TF		103.1	375.0	111-23-05		0.00	TRANS
NEW-T	BURLEY		277D	0.050	42-29-19	252.0	126.65	0
APP	ID BNPFT-030317HGD		103.3	228.0	113-54-43		0.00	TRANS
KFTZ	IDAHO FALLS		277C1	100.000	43-21-06	32.4	66.38	200
LIC	ID BLH-940420KB		103.3	201.0	112-00-22		-133.62	SHORT
KFTZ-FM1	POCATELLO		277D	0.090	42-50-55	0.0	0.00	0
LIC	ID BLFTB-940328TE		103.3	0.0	112-26-46		0.00	BOOST
NEW-T	WESTON		277D	0.250	41-52-18	154.0	120.56	0
APP	ID BNPFT-030317LOU		103.3	378.0	111-48-31		0.00	TRANS
NEW-T	IDAHO FALLS		279D	0.250	43-28-31	24.6	76.68	0
APP	ID BNPFT-030317DGW		103.7	77.0	112-03-03		0.00	TRANS
NEW-T	LAVA HOT SPRINGS		279D	0.250	42-36-59	125.3	44.58	0
APP	ID BNPFT-030317MAX		103.7	139.0	112-00-08		0.00	TRANS
NEW-T	POCATELLO		279D	0.010	42-55-15	45.5	11.48	0
APP	ID BNPFT-030317DHA		103.7	679.0	112-20-44		0.00	TRANS
NEW-T	SODA SPRINGS		279D	0.250	42-38-30	108.4	72.13	0
APP	ID BNPFT-030317EBX		103.7	80.0	111-36-40		0.00	TRANS

44444 END OF FM SPACING STUDY FOR CHANNEL 277 44444

3. Facilities Proposed

The proposed operation is on Channel 277D (103.3 MHz) with a maximum lobe effective radiated power of 2.0 kilowatts (3.01 dBk). Operation is proposed with a vertically polarized Scala CL-FM log periodic antenna, oriented at 0° True.

The antenna support structure does not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

a. NIER Calculations

Study of the area within 1000 meters of the proposed site reveals no likely sources of non-ionizing radiation other than K12OA (more than 500 meters away), and the license for FM booster KPLV-FM1 (less than 100 Watts ERP). Thus, the ground level NIER values near the base of the proposed structure are believed to be negligible. Precise calculations are made only with regard to the levels from this proposal.

"Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. Equation #1, contained in the Gailey & Tell report and shown below, was used to calculate the ground level power density figures from each antenna at incremental distances from the base of its supporting tower.

$$S(\text{mW} / \text{cm}^2) = \frac{33.40981 \times \text{AdjERP}(\text{Watts})}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

D is the distance in meters from the center of radiation to the calculation point.

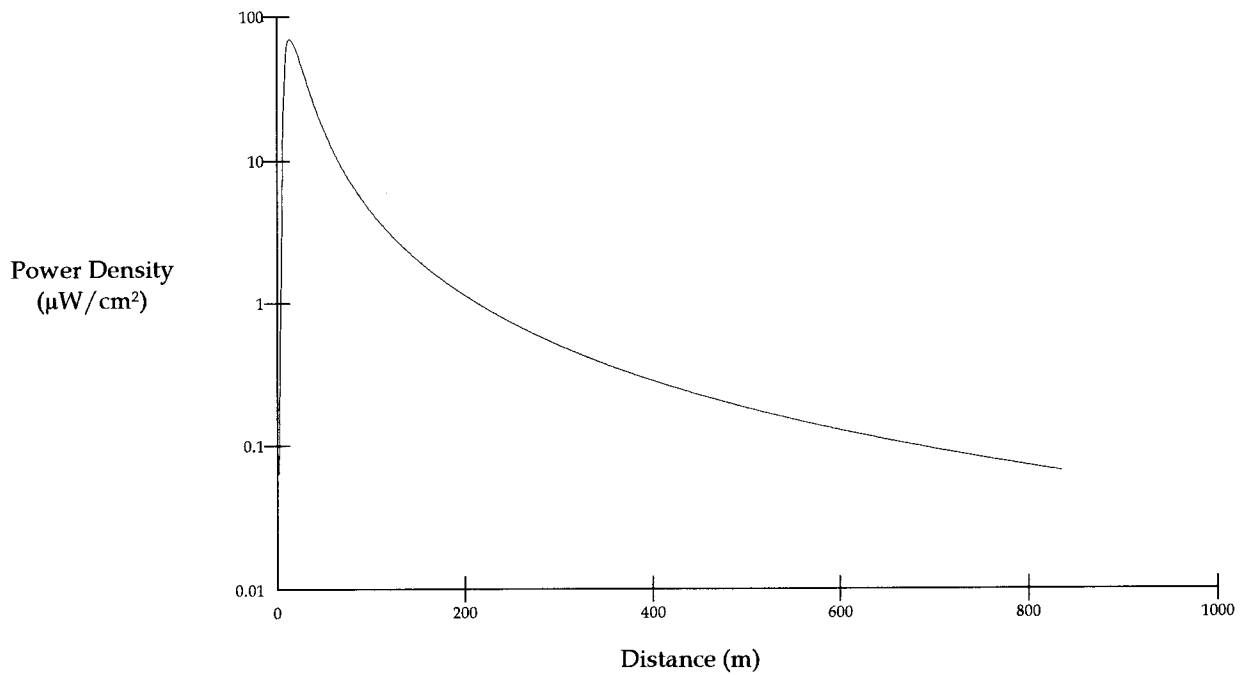
Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the proposed antenna system assuming the appropriate vertical plane pattern for a single-bay Scala/Kathrein CL-FM(V) antenna, which is the type proposed for use by KFTZ-FM1. The highest calculated ground level power density occurs at a distance of 16 meters from the base of the antenna support structure. At this point the power density is calculated to be 70.3 FW/cm², 7% of 1000 FW/cm² (the FCC standard for controlled environments) and 35% of 200 FW/cm² (the FCC standard for uncontrolled environments).

Public access to the site is restricted by a locked gate and the antenna tower is posted with warning signs. Pursuant to OST Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency radiation in excess of FCC guidelines.

Power Density vs Distance



Ground-Level NIER Analysis

KFTZ-FM1 Pocatello

Antenna Type: Scala CL-FM(V)

Number of Elements: 1

Element Spacing: dna

Distance: 1000 meters

Horizontal ERP: 0 kW

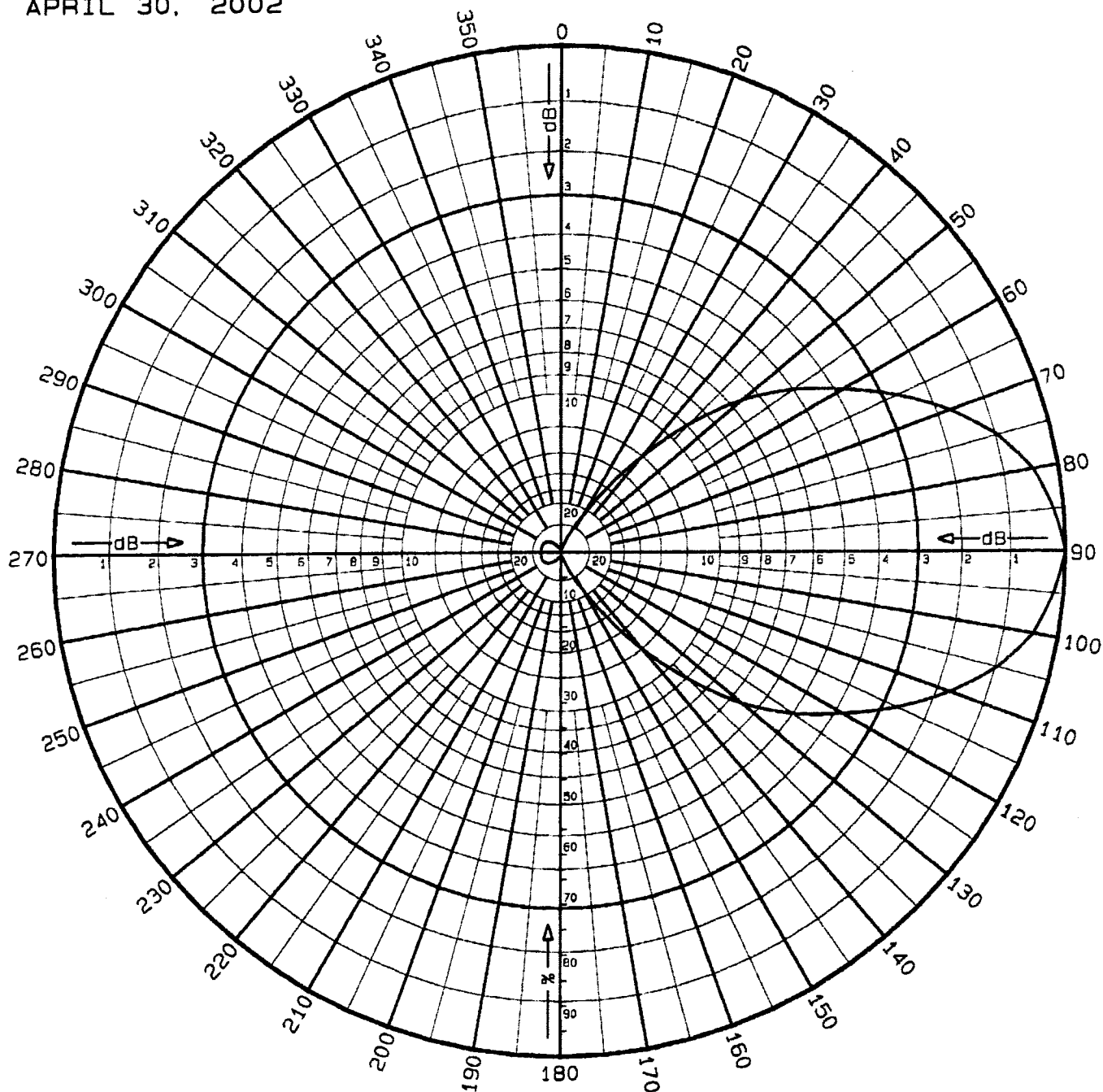
Vertical ERP: 2 kW

Antenna Height: 12 meters AGL

Maximum Power Density is $70.3 \mu\text{W}/\text{cm}^2$ at 16 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers

APRIL 30, 2002



ONE CL-FM/VRM LOG-PERIODIC ANTENNA
GAIN: 7.0 dBd.
POWER GAIN: 5.0
FREQUENCY: 103.3 MHZ
VERTICAL POLARIZATION
VERTICAL PLANE PATTERN

90 DEGREES = HORIZON

KATHREIN
SCALA DIVISION

Post Office Box 4580 Phone: (541) 779-6500
Medford, OR 97501 (USA) Fax: (541) 779-3981
<http://www.kathrein.com>

ONE CL-FM/VRM LOG-PERIODIC ANTENNA
VERTICAL POLARIZATION - VERTICAL PLANE PATTERN

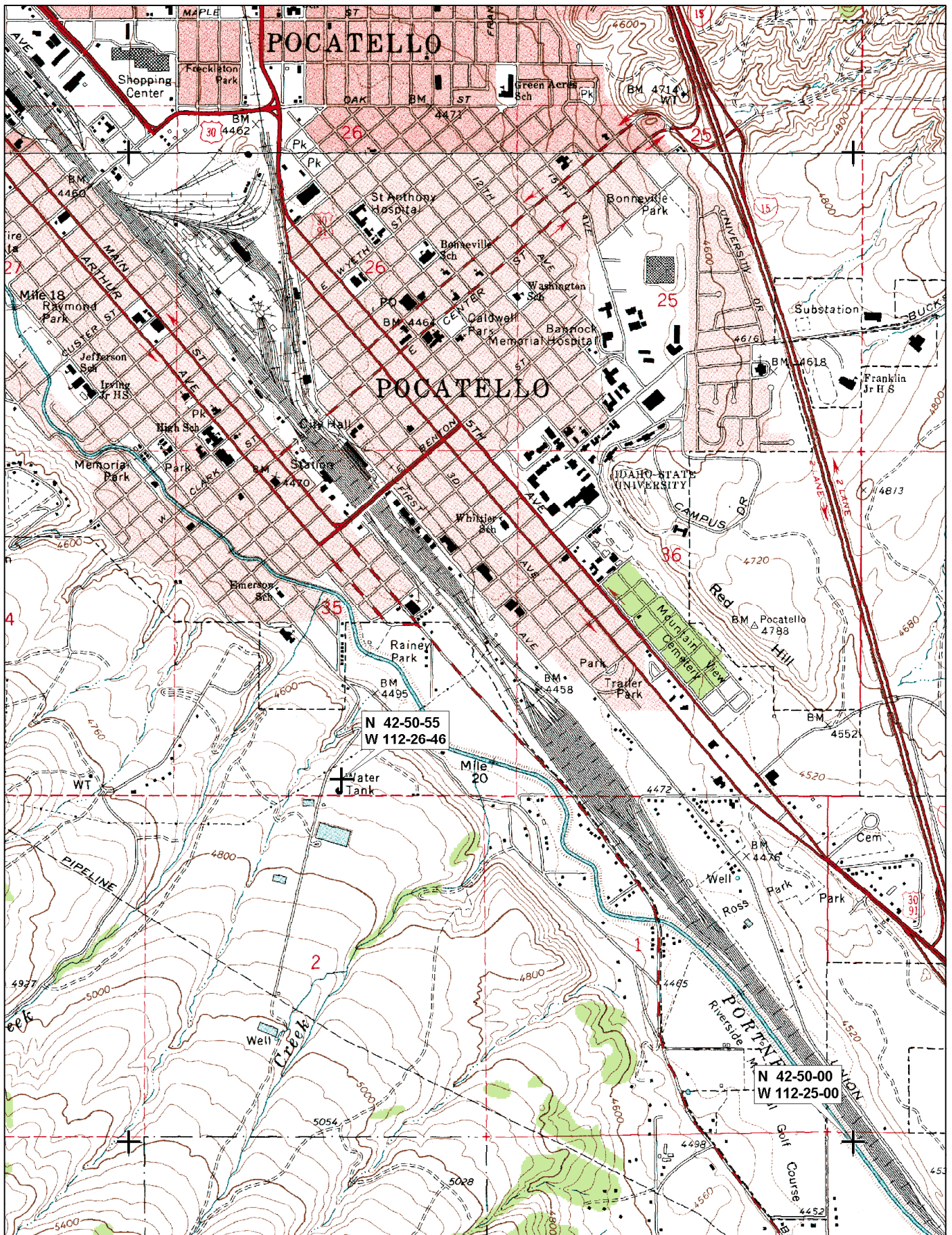
Azimuth	Relative Field	Relative dB	dBd	Power Gain
90	1.000	0.0	7.0	5.012
91	0.996	-0.0	7.0	5.012
92	0.992	-0.1	6.9	4.898
93	0.988	-0.1	6.9	4.898
94	0.984	-0.1	6.9	4.898
95	0.980	-0.2	6.8	4.786
96	0.974	-0.2	6.8	4.786
97	0.968	-0.3	6.7	4.677
98	0.962	-0.3	6.7	4.677
99	0.956	-0.4	6.6	4.571
100	0.950	-0.4	6.6	4.571
101	0.939	-0.5	6.5	4.467
102	0.928	-0.6	6.4	4.365
103	0.917	-0.8	6.2	4.169
104	0.906	-0.9	6.1	4.074
105	0.895	-1.0	6.0	3.981
106	0.880	-1.1	5.9	3.890
107	0.865	-1.3	5.7	3.715
108	0.850	-1.4	5.6	3.631
109	0.835	-1.6	5.4	3.467
110	0.820	-1.7	5.3	3.388
111	0.803	-1.9	5.1	3.236
112	0.786	-2.1	4.9	3.090
113	0.769	-2.3	4.7	2.951
114	0.752	-2.5	4.5	2.818
115	0.735	-2.7	4.3	2.692
116	0.717	-2.9	4.1	2.570
117	0.699	-3.1	3.9	2.455
118	0.681	-3.3	3.7	2.344
119	0.663	-3.6	3.4	2.188
120	0.645	-3.8	3.2	2.089
121	0.628	-4.0	3.0	1.995
122	0.612	-4.3	2.7	1.862
123	0.595	-4.5	2.5	1.778
124	0.579	-4.7	2.3	1.698
125	0.563	-5.0	2.0	1.585
126	0.544	-5.3	1.7	1.479
127	0.525	-5.6	1.4	1.380
128	0.507	-5.9	1.1	1.288
129	0.488	-6.2	0.8	1.202
130	0.470	-6.6	0.4	1.096
131	0.448	-7.0	0.0	1.000
132	0.426	-7.4	-0.4	0.912
133	0.404	-7.9	-0.9	0.813
134	0.382	-8.4	-1.4	0.724
135	0.360	-8.9	-1.9	0.646
136	0.338	-9.4	-2.4	0.575
137	0.316	-10.0	-3.0	0.501
138	0.294	-10.6	-3.6	0.437
139	0.272	-11.3	-4.3	0.372
140	0.250	-12.0	-5.0	0.316

ONE CL-FM/VRM LOG-PERIODIC ANTENNA
VERTICAL POLARIZATION - VERTICAL PLANE PATTERN

Azimuth	Relative Field	Relative dB	dBd	Power Gain
141	0.231	-12.7	-5.7	0.269
142	0.212	-13.5	-6.5	0.224
143	0.193	-14.3	-7.3	0.186
144	0.174	-15.2	-8.2	0.151
145	0.155	-16.2	-9.2	0.120
146	0.141	-17.0	-10.0	0.100
147	0.127	-17.9	-10.9	0.081
148	0.113	-18.9	-11.9	0.065
149	0.099	-20.1	-13.1	0.049
150	0.085	-21.4	-14.4	0.036
151	0.077	-22.3	-15.3	0.030
152	0.069	-23.2	-16.2	0.024
153	0.061	-24.3	-17.3	0.019
154	0.053	-25.5	-18.5	0.014
155	0.045	-26.9	-19.9	0.010
156	0.040	-28.0	-21.0	0.008
157	0.035	-29.1	-22.1	0.006
158	0.030	-30.5	-23.5	0.004
159	0.025	-32.0	-25.0	0.003
160	0.020	-34.0	-27.0	0.002
161	0.018	-34.9	-27.9	0.002
162	0.016	-35.9	-28.9	0.001
163	0.014	-37.1	-30.1	0.001
164	0.012	-38.4	-31.4	0.001
165	0.010	-40.0	-33.0	0.001
166	0.010	-40.0	-33.0	0.001
167	0.010	-40.0	-33.0	0.001
168	0.010	-40.0	-33.0	0.001
169	0.010	-40.0	-33.0	0.001
170	0.010	-40.0	-33.0	0.001
171	0.010	-40.0	-33.0	0.001
172	0.010	-40.0	-33.0	0.001
173	0.010	-40.0	-33.0	0.001
174	0.010	-40.0	-33.0	0.001
175	0.010	-40.0	-33.0	0.001
176	0.010	-40.0	-33.0	0.001
177	0.010	-40.0	-33.0	0.001
178	0.010	-40.0	-33.0	0.001
179	0.010	-40.0	-33.0	0.001
180	0.010	-40.0	-33.0	0.001

b. Blanketing Contour

The 115 dBu contour for the proposed facilities extends 557 meters from the tower, based on the calculation methodology shown in §73.318 of the Commission's Rules. Most of the area within the blanketing contour is unpopulated. The height of the proposed antenna above ground and its vertical radiation characteristics should mitigate any adverse effects to nearby residents or other communications facilities. If such adverse effects occur, the applicant will be responsible for their amelioration as prescribed in §73.318, including receiver-induced intermodulation to facilities in existence or authorized or receivers in use prior to grant of this application.



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Zoom Level: 13-1 Datum: NAD27

Scale 1 : 24,000
1" = 610 m

